| L<br>Number | Hits | Search Text   | DB                     | Time stamp          |
|-------------|------|---|------------------------|---------------------|
| 1           | 0    |   | USPAT;                 | 2003/06/15          |
|             |      | adj line and memory adj cell  | US-PGPUB;<br>EPO; JPO; | 17:23               |
|             |      |   | DERWENT;               |                     |
| 2           | 173  | (magnetic adj tunnel adj junction mjt)  | IBM_TDB<br>USPAT;      | 2003/06/15          |
| _           |      | and bit adj line and word adj line and  | US-PGPUB;              | 17:24               |
|             |      | memory adj cell   | EPO; JPO;<br>DERWENT;  |                     |
|             |      |   | IBM_TDB                |                     |
| 3           | 68   | (magnetic adj tunnel adj junction mjt) and bit adj line and word adj line and | USPAT;<br>US-PGPUB;    | 2003/06/15          |
|             |      | memory adj cell and memory adj2   | EPO; JPO;              | 17.25               |
|             |      | device.ti,ab,clm.   | DERWENT;<br>IBM TDB    |                     |
| 4           | 11   | (magnetic adj tunnel adj junction mjt)  | USPAT;                 | 2003/06/15          |
|             |      | and bit adj line and word adj line and  | US-PGPUB;              | 17:36               |
|             |      | memory adj cell and memory adj2<br>device.ti,ab,clm. and reference adj layer  | EPO; JPO;<br>DERWENT;  | 1.1                 |
|             |      |   | IBM_TDB                | 2022/06/25          |
| 5           | 6    | (magnetic adj tunnel adj junction mjt) and bit adj line and word adj line and | USPAT;<br>US-PGPUB;    | 2003/06/15          |
|             |      | memory adj cell and memory adj2   | EPO; JPO;              | 17.07               |
|             |      | device.ti,ab,clm. and reference adj layer                                     | DERWENT;               |                     |
| 7           | 7    | and read adj line (magnetic adj tunnel adj junction mjt)                      | IBM_TDB<br>USPAT;      | 2003/06/15          |
|             |      | and bit adj line and word adj line and  | US-PGPUB;              | 17:38               |
|             |      | memory adj cell and memory adj2<br>device.ti,ab,clm. and reference adj layer  | EPO; JPO; DERWENT;     |                     |
|             | 1    | and read near6 line   | IBM_TDB                |                     |
| 6           | 11   | (magnetic adj tunnel adj junction mjt) and bit adj line and word adj line and | USPAT;<br>US-PGPUB;    | 2003/06/15          |
|             |      | memory adj cell and memory adj2   | EPO; JPO;              | 1.10                |
|             |      | device.ti,ab,clm. and reference adj layer and read                            | DERWENT;<br>IBM TDB    |                     |
| 8           | 6    |   | USPAT;                 | 2003/06/15          |
|             |      | adj cell and memory adj2  | US-PGPUB;<br>EPO; JPO; | 18:53               |
|             |      | device.ti,ab,clm. and reference adj layer and read adj line                   | DERWENT;               |                     |
|             | 1000 |   | IBM_TDB                | 2003/06/15          |
| 9           | 1883 | ((257/30) or (257/427) or (365/158) or (365/171) or (365/172) or (365/173) or | USPAT;<br>US-PGPUB;    | 18:57               |
|             |      | (360/113) or (360/324) or (360/343) or  | EPO; JPO;              |                     |
|             |      | (360/344) or (360/345) or (360/346) or (360/347)).CCLS.                       | DERWENT;<br>IBM_TDB    |                     |
| 10          | 5    | (((257/30) or (257/427) or (365/158) or                                       | USPAT;                 | 2003/06/15          |
|             |      | (365/171) or (365/172) or (365/173) or (360/113) or (360/324) or (360/343) or | US-PGPUB;<br>EPO; JPO; | 18:58               |
|             |      | (360/344) or (360/345) or (360/346) or  | DERWENT;               |                     |
|             |      | (360/347)).CCLS.) and reference adj<br>layer and data adj layer and (mjt or   | IBM_TDB                |                     |
|             |      | magnetic adj tunnel\$3 adj junction)  |                        |                     |
| -           | 714  |   | USPAT;                 | 2003/06/15<br>12:13 |
|             |      |   | US-PGPUB;<br>EPO; JPO; | 12:13               |
|             |      |   | DERWENT;               |                     |
| 1           | 0    | ("mram.ti,ab.").PN.   | IBM_TDB<br>USPAT;      | 2002/05/15          |
|             |      | , made of jours justice   | US-PGPUB;              | 13:13               |
|             |      |   | EPO; JPO;<br>DERWENT;  |                     |
|             |      |   | IBM_TDB                |                     |
| -           | 276  | mram.ti,ab.   | USPAT;                 | 2002/05/15          |
|             |      |   | US-PGPUB;<br>EPO; JPO; | 13:21               |
|             |      |   | DERWENT;               | i<br>I              |
|             | i    |   | IBM TDB                | 1                   |

|     | 000             | ((257/295).CCLS.) or mram.ti,ab.  | USPAT;    | 2002/05/15   |
|-----|-----------------|---|-----------|--------------|
| -   | 988             | ((257/295).CCLS.) OF MIAM.CI, ab.   | US-PGPUB; | 13:21        |
|     |                 |   | EPO; JPO; | 13.21        |
|     |                 |   | DERWENT;  |              |
|     |                 |   | IBM TDB   |              |
|     | 873             | magnetic adj memory adj device  | USPAT;    | 2002/05/15   |
| -   | 0/3             | magnetic adj memory adj device  | US-PGPUB; | 13:32        |
|     |                 |   | EPO; JPO; | 10.02        |
|     |                 |   | DERWENT;  |              |
|     |                 |   | IBM TDB   |              |
| _   | 4               | (((257/295).CCLS.) or mram.ti,ab. or  | USPAT;    | 2002/05/15   |
|     | •               | (magnetic adj memory adj device)) and   | US-PGPUB; | 13:38        |
|     |                 | (ferrimagnetic or ferrimagnet) adj (layer                                     | EPO; JPO; |              |
|     |                 | or film)  | DERWENT;  | 1            |
|     |                 |   | IBM_TDB   |              |
| -   | 8               | (((257/295).CCLS.) or mram.ti,ab. or  | USPAT;    | 2002/05/15   |
|     |                 | (magnetic adj memory adj device)) and   | US-PGPUB; | 14:56        |
|     |                 | (ferrimagnetic or ferrimagnet) adj2   | EPO; JPO; |              |
| -   |                 | (layer or film)   | DERWENT;  |              |
|     |                 |   | IBM_TDB   |              |
| 1 - | 1               | (((257/295).CCLS.) or mram.ti,ab. or  | USPAT;    | 2002/05/15   |
|     |                 | (magnetic adj memory adj device)) and   | US-PGPUB; | 15:06        |
|     |                 | (ferrimagnetic or ferrimagnet) adj2   | EPO; JPO; |              |
|     |                 | (layer or film) same orient\$5  | DERWENT;  |              |
|     |                 |   | IBM_TDB   | 2002/05/15   |
| -   | 1846            | ((257/295).CCLS.) or mram.ti,ab. or   | USPAT;    | 2002/05/15   |
|     |                 | (magnetic adj memory adj device)  | US-PGPUB; | 17:14        |
|     |                 |   | EPO; JPO; |              |
|     | ĺ               |   | DERWENT;  | İ            |
|     |                 |   | IBM_TDB   | 2002/05/15   |
| -   | 2               | (((257/295).CCLS.) or mram.ti,ab. or  | USPAT;    | 2002/05/15   |
|     |                 | (magnetic adj memory adj device)) and   | US-PGPUB; | 15:51        |
|     | 16              | data adj (layer or film) near15   | EPO; JPO; |              |
|     |                 | (magnetization or magnetisation or  | DERWENT;  |              |
|     |                 | magnetized or magnetised) near15 (turn or turning or orientation or orient or | IBM_TDB   |              |
|     |                 | oriented)   |           |              |
|     | 1               | (((257/295).CCLS.) or mram.ti,ab. or  | USPAT;    | 2002/05/15   |
| ļ - | 1               | (((257/293).cch3.) of mram.tr,ab. or (magnetic adj memory adj device)) and    | US-PGPUB; | 15:59        |
| 1   |                 | data adj (layer or film) near15   | EPO; JPO; | 10.05        |
|     |                 | (magnetization or magnetisation or  | DERWENT;  | 1            |
|     |                 | magnetized or magnetised) nearl5 (turn or                                     | IBM TDB   |              |
|     | 1 1 1 1 1 1 1 1 | turning or orientation or orient or   | 12.1      |              |
|     |                 | oriented) and coercivity  |           |              |
| -   | 0               | (((257/295).CCLS.) or mram.ti,ab. or  | USPAT;    | 2002/05/15   |
|     |                 | (magnetic adj memory adj device)) and   | US-PGPUB; | 17:01        |
|     |                 | data adj (layer or film) near15   | EPO; JPO; | 1            |
|     |                 | (magnetization or magnetisation or  | DERWENT;  | 1            |
|     |                 | magnetized or magnetised) near15 (turn or                                     | IBM_TDB   |              |
|     |                 | turning or orientation or orient or   |           | 1            |
|     |                 | oriented) and coercivity and  |           |              |
|     |                 | ferrimagnetic   |           |              |
| i - | 719             |   | USPAT;    | 2002/05/15   |
|     | 111             | adj device) and af adj layer  | US-PGPUB; | 17:17        |
| 1   |                 |   | EPO; JPO; |              |
|     |                 |   | DERWENT;  |              |
|     |                 |   | IBM_TDB   | 0000 (05 (15 |
| -   | 44              | (365/172).CCLS.   | USPAT;    | 2002/05/15   |
| 1   | i               |   | US-PGPUB; | 17:35        |
|     |                 |   | EPO; JPO; |              |
|     |                 |   | DERWENT;  | 18           |
|     |                 |   | IBM_TDB   | 2002/05/15   |
| -   | 283             | (365/173).CCLS.   | USPAT;    | 2002/05/15   |
| 1   |                 |   | US-PGPUB; | 17:35        |
|     |                 |   | EPO; JPO; |              |
|     |                 |   | DERWENT;  |              |
|     | 1               | I S   | IBM TDB   |              |

| _              | 804  | ((365/171) or (365/172) or (365/173)).CCLS.                                      | USPAT;<br>US-PGPUB;              | 2002/05/15 |
|----------------|------|--|----------------------------------|------------|
|                |      | (505/1/5/).0015.   | EPO; JPO;<br>DERWENT;<br>IBM TDB |            |
| _              | 0    | (((365/171) or (365/172) or  | USPAT;                           | 2002/05/15 |
|                | ŭ    | (365/173)).CCLS.) and (antiferrimagnetic   | US-PGPUB;                        | 18:08      |
| 1              |      | or af) adj (layer of film) and (magnetic   | EPO; JPO;                        | 1          |
|                |      | adj memory) and coercivity and (data adj   | DERWENT;                         |            |
|                |      | storage near3 (layer or film))   | IBM_TDB                          |            |
| -              | 4    | (((365/171) or (365/172) or  | USPAT;                           | 2002/05/15 |
|                |      | (365/173)).CCLS.) and (antiferrimagnetic   | US-PGPUB                         | 18:10      |
|                | - 1  | or af) adj (layer of film) and (magnetic   |                                  |            |
|                | . 1  | adj memory) and coercivity   | USPAT;                           | 2002/05/15 |
| _              | 4    | (((365/171) or (365/172) or (365/173)).CCLS.) and (antiferrimagnetic             | US-PGPUB                         | 19:32      |
|                |      | or af) adj (layer of film) and (magnetic   | OD FGFOD                         | 15.32      |
|                |      | adj memory) and coercivity and (angle or   |                                  |            |
|                |      | orient or orientation or oriented or turn  |                                  |            |
|                |      | or turned or turning or rotate or rotated  |                                  |            |
|                |      | or rotation)   |                                  |            |
| _              | 0    | (((365/171) or (365/172) or  | USPAT;                           | 2002/05/15 |
|                |      | (365/173)).CCLS.) and ((synthetic adj  | US-PGPUB                         | 18:31      |
|                |      | ferrimagnetic or sf or artificial adj  |                                  |            |
|                | 1.0  | ferrimagnetic) near6 (layer or film))  |                                  |            |
| _              | 0    | (((365/171) or (365/172) or  | USPAT;                           | 2002/05/15 |
|                |      | (365/173)).CCLS.) and (synthetic adj   | US-PGPUB                         | 18:31      |
|                |      | ferrimagnetic or sf or artificial adj  |                                  |            |
|                |      | ferrimagnetic)   |                                  | 0000/05/15 |
| , <del>-</del> | 23   | (synthetic adj ferrimagnetic or sf or  | USPAT;                           | 2002/05/15 |
|                |      | artificial adj ferrimagnetic) and (mram  | US-PGPUB                         | 18:36      |
|                | 2    | or magnetic adj memory)<br>(synthetic adj (ferrimagnet or                        | USPAT;                           | 2002/05/15 |
| -              | 2    | (synthetic adj (lerrimagnet of ferrimagnet) or sf or artificial adj              | US-PGPUB                         | 18:38      |
|                |      | ferrimagnetic) and (mram or magnetic adj   | OB FGF OB                        | 10.30      |
|                |      | memory).ti,ab.   |                                  |            |
| _              | 4    | (((365/171) or (365/172) or  | USPAT;                           | 2002/05/15 |
|                |      | (365/173)).CCLS.) and (antiferrimagnetic   | US-PGPUB                         | 19:44      |
|                |      | or femn or af) adj (layer of film) and   |                                  |            |
|                |      | (magnetic adj memory) and coercivity and   |                                  |            |
|                |      | (angle or orient or orientation or   |                                  |            |
|                |      | oriented or turn or turned or turning or   |                                  |            |
|                |      | rotate or rotated or rotation)   | Lugaan                           | 2002/05/15 |
| -              | 4    | (antiferrimagnetic or femn or af) adj  | USPAT;                           | 2002/05/15 |
|                |      | (layer of film) and (magnetic adj memory)  | US-PGPUB                         | 19:46      |
|                |      | and coercivity and (angle or orient or orientation or oriented or turn or turned |                                  |            |
|                | 1 12 | or turning or rotate or rotated or   |                                  |            |
|                |      | rotation)  |                                  | 1          |
|                | 4    | (antiferrimagnetic or femn or af) adj  | USPAT;                           | 2002/05/15 |
|                |      | (layer of film) and (magnetic adj memory)  | US-PGPUB;                        | 19:48      |
| 1              |      | and coercivity and (angle or orient or   | EPO; JPO;                        |            |
|                |      | orientation or oriented or turn or turned  | DERWENT;                         |            |
|                |      | or turning or rotate or rotated or   | IBM_TDB                          |            |
|                |      | rotation)  |                                  |            |
| -              | 4    |  | USPAT;                           | 2002/05/15 |
|                |      | (layer of film) and (magnetic adj memory)  | US-PGPUB;                        | 19:48      |
|                |      | and coercivity   | EPO; JPO;                        |            |
|                |      |  | DERWENT;                         |            |
|                |      | /  | IBM_TDB                          | 2002/05/15 |
| _              | 17   | (antiferrimagnetic or femn or af) and  | USPAT;<br>US-PGPUB;              | 2002/05/15 |
|                |      | (magnetic adj memory) and coercivity   | EPO; JPO;                        | 13:31      |
|                |      |  | DERWENT;                         |            |
|                |      |  | IBM TDB                          |            |
| _              | 8934 | (antiferrimagnetic or femn or af) and (hs  | USPAT;                           | 2002/05/15 |
|                | 0934 | mtj or hard-soft adj mtj)  | US-PGPUB;                        | 19:52      |
|                |      | mej or nara sore aaj mej/  | EPO; JPO;                        |            |
| 1              |      |  | DERWENT;                         |            |
|                |      |  | DEKMENT,                         |            |

| - |     | (antiferrimagnetic or femn or af) and (hs adj mtj or hard-soft adj mtj)                                | USPAT;<br>US-PGPUB;  | 2002/05/15<br>21:17 |
|---|-----|--|--|---------------------|
| 1 |     |  | EPO; JPO;<br>DERWENT;<br>IBM TDB                                   |                     |
| - | 1   | "5966012".PN.  | USPAT  | 2002/05/15          |
| - | 1   | "5841692".PN.  | USPAT  | 2002/05/15          |
| - | 1 ' | "5801984".PN.  | USPAT  | 2002/05/15          |
| - | 1   | "5055158".PN.  | USPAT  | 2002/05/15          |
| _ | 1   | "5055158".PN.  | USPAT  | 2002/05/15          |
| - | 1   | (antiferromagnetic or femn or af) and (hs adj mtj or hard-soft adj mtj)                                | USPAT;<br>US-PGPUB;<br>EPO; JPO;                                   | 2002/11/25          |
|   |     |  | DERWENT;<br>IBM_TDB  |                     |
| - | 2   | ("5605958").PN.  | USPAT;<br>US-PGPUB;  | 2002/05/15 21:24    |
|   |     |  | EPO; JPO;<br>DERWENT;  |                     |
| - | 3   | ("5650958").PN.  | IBM_TDB<br>USPAT;<br>US-PGPUB;<br>EPO; JPO;                        | 2002/05/15 22:05    |
|   |     |  | DERWENT;<br>IBM_TDB  | 2002/05/15          |
| _ | 77  | magnetic adj memory and spacer adj layer   | USPAT;<br>US-PGPUB;<br>EPO; JPO;<br>DERWENT;                       | 2002/05/15          |
|   | 0   | magnetic adj memory and (spacer adj layer  | IBM_TDB<br>USPAT;  | 2002/05/15          |
|   | Ū   | near12 sf)   | US-PGPUB;<br>EPO; JPO;<br>DERWENT;                                 | 22:30               |
| - | 77  | magnetic adj memory and spacer adj layer   | IBM_TDB<br>USPAT;<br>US-PGPUB;<br>EPO; JPO;<br>DERWENT;            | 2002/05/15 22:48    |
| - | 7   | magnetic adj memory and (spacer adj layer near5 antiferromagnetic)                                     | IBM_TDB<br>USPAT;<br>US-PGPUB;<br>EPO; JPO;<br>DERWENT;            | 2002/05/16<br>07:45 |
| - | 3   | magnetic adj memory and (spacer adj layer<br>near5 antiferromagnetic) and (spacer<br>near12 different) | IBM_TDB<br>USPAT;<br>US-PGPUB;<br>EPO; JPO;<br>DERWENT;            | 2002/05/16 08:01    |
| - | o   | (spacer near12 antiferromagnetic near12 different) and magnetic adj2 memory                            | IBM_TDB<br>USPAT;<br>US-PGPUB;<br>EPO; JPO;<br>DERWENT;            | 2002/05/16 08:02    |
| - | 5   | spacer near12 antiferromagnetic near12 different   | IBM_TDB<br>USPAT;<br>US-PGPUB;<br>EPO; JPO;<br>DERWENT;            | 2002/05/16 08:45    |
| - | 295 | (365/158).CCLS.  | IBM_TDB<br>USPAT;<br>US-PGPUB;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | 2002/05/16 08:45    |

| ř   | 602  | (365/171).CCLS.   | USPAT;              | 2002/05/16 |
|-----|------|---|---------------------|------------|
| _   | 602  | (365/171).CCLS.   | US-PGPUB;           | 08:46      |
|     |      |   | EPO; JPO;           |            |
| +   |      |   | DERWENT;            |            |
|     |      |   | IBM_TDB             |            |
| -   | 44   | (365/172).CCLS.   | USPAT;              | 2002/05/16 |
|     |      |   | US-PGPUB;           | 08:46      |
|     |      |   | EPO; JPO;           |            |
|     |      |   | DERWENT;<br>IBM TDB |            |
|     | 283  | (365/173).CCLS.   | USPAT;              | 2002/05/16 |
|     | 203  | (303/173/.0015.   | US-PGPUB;           | 08:46      |
| 1   |      |   | EPO; JPO;           |            |
| ł   |      |   | DERWENT;            | 1          |
|     |      |   | IBM_TDB             |            |
| _   | 3429 | (365/174).CCLS.   | USPAT;              | 2002/05/16 |
|     |      |   | US-PGPUB;           | 08:46      |
| 1   | 1    |   | EPO; JPO;           |            |
|     |      |   | DERWENT;<br>IBM TDB |            |
|     | 431  | (257/30).CCLS.  | USPAT;              | 2002/05/16 |
|     | 131  | (2577507.0015.  | US-PGPUB;           | 08:47      |
|     |      |   | EPO; JPO;           |            |
|     |      |   | DERWENT;            |            |
|     |      |   | IBM_TDB             | \          |
| -   | 4807 | ((365/158).CCLS.) or ((365/171).CCLS.) or                                   | USPAT;              | 2002/05/16 |
|     |      | ((365/172).CCLS.) or ((365/173).CCLS.) or                                   | US-PGPUB;           | 08:47      |
|     |      | ((365/174).CCLS.) or ((257/30).CCLS.)                                       | EPO; JPO;           | i i        |
|     |      |   | DERWENT;<br>IBM TDB |            |
| _   | 179  | <br> spacer and coercivity and  | USPAT;              | 2002/05/16 |
|     | 119  | antiferromagnetic   | US-PGPUB;           | 08:48      |
|     |      |   | EPO; JPO;           | 1          |
|     |      |   | DERWENT;            | 1          |
|     |      |   | IBM_TDB             | 2222/25/25 |
| -   | 11   | (((365/158).CCLS.) or ((365/171).CCLS.)                                     | USPAT;              | 2002/05/16 |
|     |      | or ((365/172).CCLS.) or ((365/173).CCLS.)                                   | US-PGPUB;           | 13:56      |
|     | 1    | or ((365/174).CCLS.) or ((257/30).CCLS.)) and (spacer and coercivity and    | EPO; JPO; DERWENT;  | 1          |
|     | 1    | antiferromagnetic)  | IBM TDB             |            |
| -   | 5    | ((((365/158).CCLS.) or ((365/171).CCLS.)                                    | USPAT;              | 2002/05/16 |
|     |      | or ((365/172).CCLS.) or ((365/173).CCLS.)                                   | US-PGPUB;           | 14:30      |
| 1   | 1    | or ((365/174).CCLS.) or ((257/30).CCLS.))                                   | EPO; JPO;           | ì          |
|     |      | and (spacer and coercivity and  | DERWENT;            |            |
|     |      | antiferromagnetic)) and @pd<20000104  | IBM_TDB             | 2002/05/16 |
| -   | 0    | mtj adj mr and world adj line and bottom                                    | USPAT;<br>US-PGPUB; | 14:31      |
|     |      | adj electrode   | EPO; JPO;           | 14.31      |
| 1   |      |   | DERWENT;            |            |
|     |      |   | IBM_TDB             |            |
| -   | 0    | mtj adj mr and world adj line   | USPAT;              | 2002/05/16 |
|     |      |   | US-PGPUB;           | 14:32      |
|     | 1    |   | EPO; JPO;           |            |
|     |      |   | DERWENT;<br>IBM TDB |            |
|     |      | mti adi mr and word adi lino  | USPAT;              | 2002/05/16 |
| 1 - | 1    | mtj adj mr and word adj line  | US-PGPUB;           | 14:33      |
| 1   |      |   | EPO; JPO;           | - 1 - 2    |
| 1   |      |   | DERWENT;            |            |
|     | 1    |   | IBM_TDB             |            |
| -   | 7    | "6114719"   | USPAT;              | 2002/05/16 |
|     |      |   | US-PGPUB;           | 15:30      |
| 1   |      |   | EPO; JPO;           |            |
| 1   |      |   | DERWENT;            |            |
|     | _    | mtj and (current near12 (magnetization or                                   | IBM_TDB<br>USPAT;   | 2002/05/16 |
|     | 3    | magnetized)) near12 (magnetization or magnetized)) near12 (perpendicular or | US-PGPUB;           | 16:37      |
|     |      | orthogonal)   | EPO; JPO;           |            |
|     |      | or anogonar,  | DERWENT;            |            |
|     |      |   | IBM TDB             |            |

| [-=: | 0         | "not pinned" and (mram or mtj)            | USPAT;             | 2002/05/16   |
|------|-----------|---|--------------------|--------------|
|      |           | , , , , , , , , , , , , , , , , , , ,     | US-PGPUB;          | 16:44        |
|      |           |   | EPO; JPO;          |              |
|      |           |   | DERWENT;           |              |
|      |           |   | IBM TDB            |              |
| _    | 0         | "not pinned" and (mram or mtj or          | USPAT;             | 2002/05/16   |
|      |           | magneto-resistive or af adj layer)        | US-PGPUB;          | 16:45        |
|      |           |   | EPO; JPO;          |              |
|      |           |   | DERWENT;           |              |
|      |           |   | IBM_TDB            |              |
| _    | 178       | (hard same soft) and (mram or mtj or      | USPAT;             | 2002/05/16   |
|      |           | magneto-resistive or af adj layer)        | US-PGPUB;          | 16:47        |
|      | -         |   | EPO; JPO;          |              |
|      |           |   | DERWENT;           |              |
|      |           |   | IBM_TDB            |              |
| -    | 0         | (soft-soft) and (mram or mtj or           | USPAT;             | 2002/05/16   |
|      |           | magneto-resistive or af adj layer)        | US-PGPUB;          | 16:47        |
|      |           |   | EPO; JPO;          |              |
|      |           |   | DERWENT;           |              |
|      |           |   | IBM_TDB            | 0000 (05 (16 |
| _    | 0         | (   | USPAT;             | 2002/05/16   |
|      |           | magneto-resistive)                        | US-PGPUB;          | 16:49        |
|      |           |   | EPO; JPO;          | 1            |
|      |           |   | DERWENT;           |              |
|      |           | 5.  | IBM_TDB            | 2002/05/16   |
| _    | 11        | soft-soft                                 | USPAT;             | 16:50        |
|      |           |   | US-PGPUB;          | 16:30        |
|      |           |   | EPO; JPO; DERWENT; |              |
|      |           |   | IBM TDB            | 1            |
|      | 0         | noft noft and magnetic                    | USPAT;             | 2002/05/16   |
| _    | 0         | soft-soft and magnetic                    | US-PGPUB;          | 16:50        |
|      |           |   | EPO; JPO;          | 10.50        |
|      |           |   | DERWENT;           |              |
|      |           |   | IBM TDB            |              |
| _    | 3         | mtj and second adj free                   | USPAT;             | 2002/05/16   |
| _    | 7         | Mej and second adj free                   | US-PGPUB;          | 20:54        |
|      | 1 1 1 1 1 |   | EPO; JPO;          |              |
| 8    |           |   | DERWENT;           |              |
| 8    |           |   | IBM TDB            |              |
| _    | 17        | (spacer near12 (ru or ruthenium)) near12  | USPAT;             | 2002/05/16   |
|      |           | (af adj layer reference adj layer or data | US-PGPUB;          | 22:40        |
|      |           | adj layer or sens\$3 adj layer or pinned  | EPO; JPO;          |              |
|      |           | adj2 layer)                               | DERWENT;           |              |
|      |           |   | IBM TDB            |              |
| _    | 3         | (("5640343") or ("6269018") or            | USPAT              | 2002/05/16   |
|      |           | ("5966012")).PN.                          |                    | 23:13        |
| -    | 431       | (257/30).CCLS.                            | USPAT;             | 2002/05/17   |
|      |           |   | US-PGPUB;          | 08:31        |
|      |           |   | EPO; JPO;          |              |
|      |           |   | DERWENT;           |              |
|      |           |   | IBM_TDB            |              |
| -    | 68        | magnetic and ((257/30).CCLS.)             | USPAT;             | 2002/05/17   |
|      |           |   | US-PGPUB;          | 08:32        |
|      |           |   | EPO; JPO;          |              |
|      |           |   | DERWENT;           |              |
|      |           |   | IBM_TDB            | 1000040545   |
| -    | 16850     | 117/\$6.ccls.                             | USPAT;             | 2002/05/17   |
|      |           |   | US-PGPUB;          | 09:40        |
|      |           |   | EPO; JPO;          |              |
|      |           |   | DERWENT;           |              |
|      |           |   | IBM_TDB            | 10000/05/15  |
|      | 1         |   | USPAT;             | 2002/05/17   |
|      |           | (rhombohedral adj crystal nearl2 c-axis)  | US-PGPUB;          | 09:13        |
|      |           |   | EPO; JPO;          |              |
|      |           |   | DERWENT;           |              |
| 1    |           |   | IBM TDB            | 1            |

| -   | 1 (rhombohedral adj crystal near12 c-axi and 257/\$6.ccls.              | US-PGPUB; 09:14<br>EPO; JPO;<br>DERWENT;                                 |
|-----|---|--|
| _   | sapphire adj substrate.ti,ab. and c-axis.ti,ab.                         | IBM_TDB<br>USPAT; 2002/05/17<br>US-PGPUB; 09:32<br>EPO; JPO;             |
| -   | 0 sapphire adj substrate.ti,ab. and c-axis.ti,ab. and 117/\$6.ccls.     | DERWENT;<br>IBM_TDB<br>USPAT; 2002/05/17<br>US-PGPUB; 09:32<br>EPO; JPO; |
| -   | 6 117/\$6.ccls. and rhombohedral.ti,ab.                                 | DERWENT;<br>IBM_TDB<br>USPAT; 2002/05/17<br>US-PGPUB; 09:42<br>EPO; JPO; |
| -   | 1 117/\$6.ccls. and rhombohedral.ti,ab. a sapphire and semiconductor    | US-PGPUB; 09:45<br>EPO; JPO;   |
| _   | 6 148/\$6.ccls. and rhombohedral and c-ax                               | DERWENT;<br>IBM_TDB<br>USPAT;<br>US-PGPUB;<br>EPO; JPO;<br>DERWENT;      |
| -   | 2 148/\$6.ccls. and rhombohedral and c-ax and nitride                   | IBM_TDB<br>USPAT; 2002/05/17<br>US-PGPUB; 09:51<br>EPO; JPO;             |
| - з | 37 117/950.ccls.  | DERWENT;<br>IBM_TDB<br>USPAT; 2002/05/17<br>US-PGPUB; 09:51<br>EPO; JPO; |
| -   | 9 117/950.ccls. and rhombohedral  | DERWENT; IBM_TDB USPAT; US-PGPUB; EPO; JPO; DERWENT;                     |
| -   | pinned near20 reference adj layer                                       | IBM_TDB<br>USPAT; 2002/11/25<br>US-PGPUB; 09:00<br>EPO; JPO;<br>DERWENT; |
| -   | 5 mack.in. and gao.in.  | IBM_TDB<br>USPAT; 2002/11/25<br>US-PGPUB; 09:07<br>EPO; JPO;<br>DERWENT; |
| -   | 0 transverse adj (bias or biased) near15 reference adj layer.ti,ab,clm. | IBM_TDB  |
| -   | 2 transverse adj (bias or biased) near15 reference adj layer            | IBM_TDB  |
| -   | 2 ("5949623").PN.   | IBM_TDB<br>USPAT; 2002/11/25<br>US-PGPUB; 10:40<br>EPO; JPO;<br>DERWENT; |

| _ | 6   | amr adj sensor and (AF or  | USPAT;                    | 2002/11/25          |
|---|-----|--|---------------------------|---------------------|
|   |     | antiferromagnetic or ferrimagnetic) and reference adj layer                            | US-PGPUB;<br>EPO; JPO;    | 10:56               |
|   |     |  | DERWENT;<br>IBM TDB       |                     |
| - | 25  | ni-fe-nb and (antiferromagnetic or   | USPAT;                    | 2002/11/25          |
|   | 144 | ferrimagnetic)   | US-PGPUB;<br>EPO; JPO;    | 10:57               |
|   |     |  | DERWENT;                  |                     |
|   | 0   | (sf or synthetic) near2 (ferrimagnet or  | IBM_TDB<br>USPAT;         | 2002/11/25          |
| _ | U   | ferrimagnetism) and (mtj or magnetic)  | US-PGPUB;                 | 17:22               |
|   |     | near3 (sensor or sensing adj device) and   | EPO; JPO;<br>DERWENT;     |                     |
|   |     | reference adj (layer or film)  | IBM TDB                   |                     |
| - | 5   | (sf or synthetic) near2  | USPAT;<br>US-PGPUB;       | 2002/11/25          |
|   |     | (antiferromagnetism or af or afm or antiferromagnet or anti-ferromagnet or             | EPO; JPO;                 | 19.27               |
|   |     | ferrimagnet or ferrimagnetism) and (mtj  | DERWENT;                  |                     |
|   |     | or magnetic) near3 (sensor or sensing adj<br>device) and reference adj (layer or film) | IBM_TDB                   |                     |
| _ | 0   | activat\$3 near6 current near12 (amr or  | USPAT;                    | 2002/11/25          |
|   |     | anisotropic adj magnetoresistive)  | US-PGPUB;<br>EPO; JPO;    | 19:28               |
|   |     |  | DERWENT;                  |                     |
|   | 5   | activat\$3 near6 current near12 (amr or  | <pre>IBM_TDB USPAT;</pre> | 2002/11/25          |
|   |     | anisotropic adj magnetoresistive or  | US-PGPUB;                 | 19:33               |
|   |     | magneto-resistive)   | EPO; JPO; DERWENT;        |                     |
|   |     |  | IBM_TDB                   | 2224444             |
| - | 0   | soft near3 reference adj layer near12 (sf or artificial)                               | USPAT;<br>US-PGPUB;       | 2002/11/25<br>19:34 |
|   |     | of aftificial,   | EPO; JPO;                 | 20101               |
|   |     |  | DERWENT;<br>IBM TDB       |                     |
| _ | 1   | soft near3 reference adj layer and (sf or  | USPAT;                    | 2002/11/25          |
| 1 | · P | artificial)  | US-PGPUB;<br>EPO; JPO;    | 20:03               |
|   |     |  | DERWENT;                  |                     |
| _ | 0   | <br>  soft near3 reference adj layer and (sf or  | IBM_TDB<br>USPAT;         | 2002/11/25          |
|   | 1   | artificial) and (ferrimagnetic or  | US-PGPUB;                 | 19:43               |
|   |     | anti-ferromagnetic or antiferromagnetic)   | EPO; JPO; DERWENT;        |                     |
|   |     |  | IBM_TDB                   | 2002/11/25          |
| - | 2   | ("5966012").PN.  | USPAT;<br>US-PGPUB;       | 2002/11/25 20:13    |
|   |     |  | EPO; JPO;                 |                     |
|   |     |  | DERWENT;<br>IBM TDB       |                     |
| _ | 137 |  | USPAT;                    | 2002/11/25          |
|   |     | (anti-ferromagnetic or antiferromagnetic or ferrimagnetic)                             | US-PGPUB;<br>EPO; JPO;    | 20:15               |
|   |     | , ,  | DERWENT;                  |                     |
| _ | 36  | (synthetic or artificial or sf) near6  | IBM_TDB<br>USPAT;         | 2002/11/25          |
|   |     | (anti-ferromagnetic or antiferromagnetic   | US-PGPUB;                 | 20:15               |
|   |     | or ferrimagnetic) and (magnetic near6 (sensor or sensing)).ti,ab,clm.                  | EPO; JPO; DERWENT;        |                     |
|   |     |  | IBM_TDB                   | 2002/11/25          |
| _ | 43  | ((synthetic or artificial or sf) near6<br>(anti-ferromagnetic or antiferromagnetic     | USPAT;<br>US-PGPUB;       | 2002/11/25          |
|   |     | or ferrimagnetic) or saf) and (magnetic  | EPO; JPO;                 |                     |
|   |     | near6 (sensor or sensing)).ti,ab,clm.  | DERWENT;<br>IBM TDB       |                     |
| - | 21  |  | USPĀT;                    | 2002/11/25          |
|   |     | (anti-ferromagnetic or antiferromagnetic or ferrimagnetic) or saf) and (magnetic       | US-PGPUB;<br>EPO; JPO;    | 20:36               |
|   |     | near6 (sensor or sensing)).ti,ab,clm. and  | DERWENT;                  |                     |
|   |     | insulat\$3 adj layer   | IBM_TDB                   | <u> </u>            |

|   | 0    | ((synthetic or artificial or sf) near6  | USPAT;                 | 2002/11/25 |
|---|------|---|------------------------|------------|
| _ | 0    | ((synthetic of artificial of si) heard (anti-ferromagnetic or antiferromagnetic | US-PGPUB;              | 20:36      |
|   |      | or ferrimagnetic) or saf) and (magnetic   | EPO; JPO;              | 20.50      |
|   |      | near6 (sensor or sensing)).ti,ab,clm. and                                       | DERWENT;               |            |
|   |      | insulat\$3 adj layer near12 spacer  | IBM TDB                |            |
| _ | 5    | ((synthetic or artificial or sf) near6  | USPAT;                 | 2002/11/25 |
|   |      | (anti-ferromagnetic or antiferromagnetic  | US-PGPUB;              | 20:41      |
|   |      | or ferrimagnetic) or saf) and (magnetic   | EPO; JPO;              |            |
|   |      | near6 (sensor or sensing)).ti,ab,clm. and                                       | DERWENT;               |            |
|   |      | insulat\$3 adj layer and spacer   | IBM TDB                |            |
|   | 7    | ((synthetic or artificial or sf) near6  | USPAT;                 | 2002/11/26 |
|   | 1    | (anti-ferromagnetic or antiferromagnetic  | US-PGPUB;              | 18:39      |
|   | 1    | or ferrimagnetic) or saf) and (magnetic   | EPO; JPO;              |            |
|   | 1    | near6 (sensor or sensing)).ti,ab,clm. and                                       | DERWENT;               |            |
|   |      | insulat\$3 adj layer and tunnel\$3  | IBM_TDB                |            |
| _ | 2340 |   | USPAT;                 | 2002/11/26 |
|   |      | (365/171) or (365/172) or   | US-PGPUB;              | 08:32      |
|   |      | (365/173)).CCLS.  | EPO; JPO;              |            |
|   |      |   | DERWENT;               |            |
|   |      | (1000 (00) (000 (000) (000)   | IBM_TDB                | 2002/11/26 |
| - | 0    |   | USPAT;                 | 2002/11/26 |
|   |      | (365/171) or (365/172) or   | US-PGPUB;              | 08:35      |
|   |      | (365/173)).CCLS.) and reference adj layer                                       | EPO; JPO;              |            |
|   |      | near15 (sf or artificial or synthetic or  | DERWENT;               |            |
|   |      | saf) and magnetic.ti,ab,clm. and (sensor  | IBM_TDB                |            |
|   | 16   | or sensing).ti,ab,clm.<br>(((257/30) or (257/295) or (365/158) or               | USPAT;                 | 2002/11/26 |
| - | 10   | (((257/30))  of  (257/293)  of  (365/130)  of                                   | US-PGPUB;              | 11:01      |
|   |      | (365/173)).CCLS.) and (pinned or pinning  | EPO; JPO;              | 11.01      |
|   |      | or reference) adj layer near15 (sf or   | DERWENT;               |            |
| 1 |      | artificial or synthetic or saf or   | IBM TDB                |            |
|   |      | antiferromagnetic or anti-ferromagnetic)  | 12.1_122               | A 4        |
| 1 |      | and magnetic.ti,ab,clm. and (sensor or  |                        |            |
|   |      | sensing).ti,ab,clm.   |                        |            |
| _ | 118  | (257/427).CCLS.   | USPAT;                 | 2002/11/26 |
| - |      |   | US-PGPUB;              | 09:30      |
|   |      |   | EPO; JPO;              |            |
|   |      |   | DERWENT;               |            |
|   |      |   | IBM_TDB                |            |
| - | 0    | ( ( = - : ) : = - ) : )   | USPAT;                 | 2002/11/26 |
|   |      | and (anti-ferromagnetic or  | US-PGPUB;              | 09:33      |
|   |      | antoferromagnetic) and (artificial or sf  | EPO; JPO;              |            |
|   |      | or saf or synthetic)  | DERWENT;               |            |
|   |      |   | IBM_TDB                |            |
| - | 0    | ((257/427).CCLS.) and reference adj layer                                       | USPAT;                 | 2002/11/26 |
|   | 1    | and (anti-ferromagnetic or  | US-PGPUB;              | 09:33      |
|   | - 1  | antiferromagnetic or ferrimagnetic) and   | EPO; JPO;              |            |
|   |      | (artificial or sf or saf or synthetic)  | DERWENT;               | i          |
| 1 |      | (1057 (107) mmm )   | IBM TDB                | 2002/11/26 |
| - | 0    | ((257/427).CCLS.) and reference adj layer                                       | USPAT;                 | 2002/11/26 |
|   |      |   | US-PGPUB;<br>EPO; JPO; | 09:34      |
| 1 |      |   | DERWENT;               | ł          |
|   | 34   |   |                        | 1          |
|   | 1    | ((257/427).CCLS.) and (fixed or reference                                       | IBM_TDB<br>USPAT;      | 2002/11/26 |
| - | 1    |   | US-PGPUB;              | 09:34      |
|   |      | or pinning) adj layer   | EPO; JPO;              | UJ. J3     |
|   |      |   | DERWENT;               |            |
|   |      |   | IBM TDB                |            |
|   | 1    | ((257/427).CCLS.) and (fixed or reference                                       | USPAT;                 | 2002/11/26 |
| _ | 1    | or pinning or pinned) adj layer   | US-PGPUB;              | 09:36      |
|   |      | or printing or printed, adjudger  | EPO; JPO;              | 33.30      |
| 1 | 1    |   | DERWENT;               |            |
|   |      |   | IBM TDB                |            |
|   |      |   | TRW_IDR                |            |

|                 | 159 (US-5145741-\$ or US-5235195-\$ or   | USPAT;    | 2002/11/26  |
|-----------------|--|-----------|-------------|
|                 | US-5260593-\$ or US-5293560-\$ or  | US-PGPUB; | 11:02       |
|                 | US-5407845-\$ or US-5298796-\$ or  | EPO; JPO; |             |
| 1               | US-5415126-\$ or US-5455432-\$ or  | DERWENT   |             |
| 1               | US-5477485-\$ or US-5530581-\$ or  |           |             |
|                 | US-5557114-\$ or US-5580380-\$ or  |           |             |
|                 | US-5562769-\$ or US-5604357-\$ or  |           |             |
| 1               | US-5654208-\$ or US-5623442-\$ or  |           |             |
|                 | US-5714766-\$ or US-5670790-\$ or  |           |             |
|                 | US-6114719-\$ or US-5986858-\$ or  |           | 1           |
|                 | US-6185080-\$ or US-6243288-\$ or  |           |             |
|                 | US-6259586-\$ or US-6396734-\$ or  |           |             |
|                 | US-5852306-\$ or US-4460670-\$).did. or  |           |             |
|                 | (US-4462150-\$ or US-4657699-\$ or   |           |             |
| 100             | US-4738729-\$ or US-4769686-\$ or  |           |             |
|                 | US-4841349-\$ or US-4893273-\$ or  |           |             |
| 1               | US-5049950-\$ or US-5111430-\$ or US-5740104-\$ or US-5754477-\$ or  | 1         |             |
|                 | US-5789276-\$ or US-5846859-\$ or  |           |             |
|                 | US-5877041-\$ or US-5786250-\$ or  |           |             |
| 4               | US-5698869-\$ or US-5858811-\$ or  |           |             |
| 1               | US-5976926-\$ or US-6031263-\$ or  |           |             |
|                 | US-6084248-\$ or US-6093937-\$ or  |           |             |
|                 | US-6099574-\$ or US-6130147-\$ or  | 1         |             |
|                 | US-6144581-\$ or US-6163066-\$ or  | 1         |             |
|                 | US-6166401-\$ or US-6373247-\$ or  |           |             |
|                 | US-6462919-\$).did. or (US-5949623-\$ or   |           | 8           |
|                 | US-6404674-\$ or US-6469878-\$ or  | 4         |             |
|                 | US-5289408-\$ or US-6201259-\$ or  |           |             |
|                 | US-5408377-\$ or US-6108177-\$ or  |           |             |
|                 | US-5966012-\$ or US-6178112-\$ or  |           |             |
| i               | US-6205052-\$ or US-6197439-\$ or  |           |             |
|                 | US-5640343-\$ or US-5793697-\$ or  |           |             |
| 1               | US-6166948-\$ or US-6236590-\$ or  |           | 1.          |
|                 | US-6306691-\$ or US-6313482-\$ or  | 1         |             |
|                 | US-6365919-\$ or US-5371383-\$ or  |           |             |
|                 | US-5719410-\$ or US-5886368-\$ or  |           |             |
|                 | US-4826778-\$ or US-5039354-\$ or  |           | 1           |
|                 | US-5056897-\$ or US-5159424-\$ or US-5260560-\$ or US-5369040-\$).did. or  |           | -           |
|                 | (US-5451798-\$ or US-5734181-\$ or   |           |             |
|                 | US-6166319-\$ or US-6383576-\$ or  |           |             |
|                 | US-5393999-\$ or US-5449941-\$ or  |           | i           |
|                 | US-5629222-\$ or US-5801401-\$ or  |           |             |
|                 | US-5989958-\$ or US-6344663-\$ or  |           |             |
|                 | US-4849797-\$ or US-4113515-\$ or  |           | 1           |
|                 | US-4473836-\$ or US-5465249-\$ or  |           |             |
|                 | US-5539217-\$ or US-5661312-\$ or  |           |             |
|                 | US-5798548-\$ or US-6011279-\$ or  |           |             |
|                 | US-6049110-\$ or US-6075259-\$ or  |           |             |
|                 | US-6249020-\$ or US-4451391-\$ or  |           |             |
|                 | US-4768072-\$ or US-6309907-\$ or  |           |             |
|                 | US-5061976-\$ or US-5898197-\$ or  |           |             |
|                 | US-6351411-\$).did. or (US-5625217-\$ or   |           |             |
|                 | US-6018166-\$ or US-4507673-\$ or  |           |             |
|                 | US-5886379-\$ or US-5907775-\$ or US-6034001-\$ or US-5557122-\$ or  |           |             |
|                 | US-5866930-\$ or US-5808336-\$ or  |           | 1           |
|                 | US-5508543-\$).did. or (US-20010030887-\$  |           | 1           |
|                 | or US-20020101692-\$ or US-20020017647-\$  |           |             |
|                 | or US-20020018323-\$ or US-20020085323-\$  |           |             |
|                 | or US-2002013323-\$ or US-20020154539-\$   |           |             |
|                 | or US-20020033521-\$ or US-20020041514-\$  |           |             |
|                 | or US-20020036919-\$ or US-20020036331-\$  |           | 1           |
|                 | or US-20010032997-\$ or US-20010049183-\$  |           |             |
|                 | or US-20020024050-\$).did. or  |           |             |
|                 | (US-5585986-\$ or EP-291951-\$ or  |           |             |
|                 | EP-681333-\$).did. or (JP-60242678-\$ or   |           |             |
|                 | JP-60184681-\$ or JP-08255878-\$ or  |           |             |
|                 | JP-07226507-\$ or JP-06302828-\$ or  |           |             |
|                 | JP-04056769-\$ or JP-62122275-\$ or  |           |             |
|                 | JP-63181473-\$ or JP-01115162-\$ or  |           | <del></del> |
| Search History  | 6/35/832695922\$ BM JP-83289980-\$ or  |           |             |
| 1               | JP-57126175-\$ or JP-04061170-\$ or  |           |             |
|                 | TD = ECOSECT7 = 0  or  TD = 0.220.3564 = 0  or  TD = 0.220.3564 = 0.2200.3564 = 0.2200.3564 = 0.2200.3564 = 0.2200.3564 = 0.2200.3564 = 0.2200.3564 = 0.2200.3564 = 0.2200.3564 = 0.2200.3564 = 0.2200.3564 = 0.2200.3564 = 0.2200.3564 = 0.2200.3564 = 0.2200.3564 = 0.2200 | I         | 1           |
| C:\APPS\east\wo | rkspage 5685657758s998393303564-\$ or JP-06224431-\$).did. or  |           |             |

|              | 7 ((US-5145741-\$ or US-5235195-\$ or US-5260593-\$ or US-5293560-\$ or    | USPAT;<br>US-PGPUB; | 2002/11/26 |
|--------------|--|---------------------|------------|
|              | US-5260593-\$ or US-5293560-\$ or US-5407845-\$ or US-5298796-\$ or        | EPO; JPO;           | 12.11      |
|              | US-5415126-\$ or US-5455432-\$ or  | DERWENT             |            |
|              | US-5477485-\$ or US-5530581-\$ or  |                     |            |
|              | US-5557114-\$ or US-5580380-\$ or  |                     |            |
|              | US-5562769-\$ or US-5604357-\$ or  |                     |            |
|              | US-5654208-\$ or US-5623442-\$ or  |                     |            |
|              | US-5714766-\$ or US-5670790-\$ or  |                     |            |
|              | US-6114719-\$ or US-5986858-\$ or  |                     | 1          |
|              | US-6185080-\$ or US-6243288-\$ or  |                     |            |
|              | US-6259586-\$ or US-6396734-\$ or  | 1                   |            |
|              | US-5852306-\$ or US-4460670-\$).did. or                                    |                     |            |
|              | (US-4462150-\$ or US-4657699-\$ or   |                     |            |
|              | US-4738729-\$ or US-4769686-\$ or  | 1                   |            |
|              | US-4841349-\$ or US-4893273-\$ or  |                     | 1          |
|              | US-5049950-\$ or US-5111430-\$ or  |                     | 1          |
|              | US-5740104-\$ or US-5754477-\$ or  |                     |            |
|              | US-5789276-\$ or US-5846859-\$ or  |                     |            |
|              | US-5877041-\$ or US-5786250-\$ or  |                     |            |
|              | US-5698869-\$ or US-5858811-\$ or  |                     |            |
|              | US-5976926-\$ or US-6031263-\$ or  | 1                   |            |
|              | US-6084248-\$ or US-6093937-\$ or  |                     |            |
|              | US-6099574-\$ or US-6130147-\$ or  | 1                   |            |
|              | US-6144581-\$ or US-6163066-\$ or  |                     |            |
|              | US-6166401-\$ or US-6373247-\$ or  |                     | 1          |
|              | US-6462919-\$).did. or (US-5949623-\$ or US-6404674-\$ or US-6469878-\$ or |                     |            |
|              | US-5289408-\$ or US-6201259-\$ or  |                     |            |
|              | US-5408377-\$ or US-6108177-\$ or  |                     |            |
|              | US-5966012-\$ or US-6178112-\$ or  |                     |            |
|              | US-6205052-\$ or US-6197439-\$ or  |                     |            |
|              | US-5640343-\$ or US-5793697-\$ or  | 1                   |            |
|              | US-6166948-\$ or US-6236590-\$ or  |                     |            |
|              | US-6306691-\$ or US-6313482-\$ or  |                     | i .        |
|              | US-6365919-\$ or US-5371383-\$ or  |                     |            |
| į.           | US-5719410-\$ or US-5886368-\$ or  |                     |            |
|              | US-4826778-\$ or US-5039354-\$ or  |                     |            |
|              | US-5056897-\$ or US-5159424-\$ or  |                     |            |
|              | US-5260560-\$ or US-5369040-\$).did. or                                    |                     |            |
|              | (US-5451798-\$ or US-5734181-\$ or   |                     |            |
|              | US-6166319-\$ or US-6383576-\$ or  |                     |            |
| 1            | US-5393999-\$ or US-5449941-\$ or  |                     |            |
|              | US-5629222-\$ or US-5801401-\$ or  |                     |            |
|              | US-5989958-\$ or US-6344663-\$ or  |                     |            |
|              | US-4849797-\$ or US-4113515-\$ or  |                     |            |
|              | US-4473836-\$ or US-5465249-\$ or  |                     |            |
| 1            | US-5539217-\$ or US-5661312-\$ or  |                     |            |
| 1            | US-5798548-\$ or US-6011279-\$ or  |                     |            |
|              | US-6049110-\$ or US-6075259-\$ or  |                     |            |
|              | US-6249020-\$ or US-4451391-\$ or  |                     |            |
|              | US-4768072-\$ or US-6309907-\$ or  |                     |            |
| 1            | US-5061976-\$ or US-5898197-\$ or US-6351411-\$).did. or (US-5625217-\$ or |                     |            |
|              | US-6351411-\$).did. or (US-5625217-\$ Of US-6018166-\$ or US-4507673-\$ or | 1                   |            |
|              | US-5886379-\$ or US-5907775-\$ or  |                     |            |
|              | US-6034001-\$ or US-5557122-\$ or  |                     |            |
|              | US-5866930-\$ or US-5808336-\$ or  |                     |            |
| V            | US-5508543-\$).did. or (US-20010030887-\$                                  |                     |            |
|              | or US-20020101692-\$ or US-20020017647-\$                                  |                     |            |
| 4            | or US-20020018323-\$ or US-20020085323-\$                                  |                     |            |
| 70           | or US-20020131219-\$ or US-20020154539-\$                                  |                     |            |
|              | or US-20020033521-\$ or US-20020041514-\$                                  |                     | 1          |
|              | or US-20020036919-\$ or US-20020036331-\$                                  |                     |            |
|              | or US-20010032997-\$ or US-20010049183-\$                                  |                     |            |
|              | or US-20020024050-\$).did. or  |                     |            |
|              | (US-5585986-\$ or EP-291951-\$ or  |                     |            |
|              | EP-681333-\$).did. or (JP-60242678-\$ or                                   |                     |            |
|              | JP-60184681-\$ or JP-08255878-\$ or  |                     |            |
|              | JP-07226507-\$ or JP-06302828-\$ or  |                     |            |
|              | JP-04056769-\$ or JP-62122275-\$ or  |                     |            |
|              | JP-63181473-\$ or JP-01115162-\$ or  |                     |            |
| arch History | 6/35/832695922\$ BM JP-83989960-\$ or                                      |                     |            |
| İ            | JP-57126175-\$ or JP-04061170-\$ or  |                     |            |
| l l          | kspades \$6056677ces 999B393303564-\$ or                                   |                     |            |

| - | 0    | (360/113).CCLS.  | USPAT;<br>US-PGPUB;<br>EPO; JPO;             | 2002/11/26 13:48    |
|---|------|--|--|---------------------|
|   |      |  | DERWENT;<br>IBM TDB                          |                     |
|   | 100  | (360/324).CCLS.  | USPAT;<br>US-PGPUB;<br>EPO; JPO;             | 2002/11/26<br>13:49 |
|   |      |  | DERWENT;<br>IBM TDB                          |                     |
| - | 7    | (360/325).CCLS.  | USPĀT;<br>US-PGPUB;                          | 2002/11/26<br>13:49 |
|   |      |  | EPO; JPO;<br>DERWENT;<br>IBM TDB             |                     |
| - | 14   | (360/326).CCLS.  | USPAT;<br>US-PGPUB;<br>EPO; JPO;             | 2002/11/26          |
|   |      |  | DERWENT;<br>IBM_TDB                          |                     |
| - | 49   | (360/327).CCLS.  | USPAT;<br>US-PGPUB;<br>EPO; JPO;             | 2002/11/26          |
|   |      |  | DERWENT;<br>IBM_TDB                          |                     |
| - | 0    | (360/113).CCLS.  | USPAT;<br>US-PGPUB;<br>EPO; JPO;             | 2002/11/26          |
|   | 1.55 | (/260/224)   | DERWENT;<br>IBM_TDB                          | 2002/11/26          |
| _ | 166  | ((360/324).CCLS.) or ((360/325).CCLS.) or ((360/326).CCLS.) or ((360/327).CCLS.) or ((360/113).CCLS.)                          | USPAT;<br>US-PGPUB;<br>EPO; JPO;             | 13:49               |
| _ | 0    | (((360/324).CCLS.) or ((360/325).CCLS.)  | DERWENT;<br>IBM_TDB<br>USPAT;                | 2002/11/26          |
|   |      | or ((360/326).CCLS.) or ((360/327).CCLS.) or ((360/113).CCLS.)) and reference adj layer and magnetic adj (sensor or            | US-PGPUB;<br>EPO; JPO;<br>DERWENT;           | 13:51               |
|   |      | sensing)   | IBM_TDB                                      |                     |
| _ | 0    | (((360/324).CCLS.) or ((360/325).CCLS.) or ((360/326).CCLS.) or ((360/327).CCLS.) or ((360/113).CCLS.)) and reference adjlayer | USPAT;<br>US-PGPUB;<br>EPO; JPO;<br>DERWENT; | 2002/11/26          |
|   | 30   | (((360/324).CCLS.) or ((360/325).CCLS.)  | IBM_TDB<br>USPAT;                            | 2002/11/26          |
|   |      | or ((360/326).CCLS.) or ((360/327).CCLS.) or ((360/113).CCLS.)) and (fixed or pinned or pinning) adj layer                     | US-PGPUB;<br>EPO; JPO;<br>DERWENT;           | 14:22               |
| _ | 25   | ((((360/324).CCLS.) or ((360/325).CCLS.)   | IBM_TDB<br>USPAT;                            | 2002/11/26          |
|   |      | or ((360/326).CCLS.) or ((360/327).CCLS.) or ((360/113).CCLS.)) and (fixed or pinned or pinning) adj layer) and                | US-PGPUB;<br>EPO; JPO;<br>DERWENT;           | 14:23               |
|   |      | (anti-ferromagnetic or antiferromagnetic)  | IBM_TDB                                      |                     |
| - | 23   | or ((360/326).CCLS.) or ((360/327).CCLS.) or ((360/113).CCLS.)) and (fixed or  | USPAT;<br>US-PGPUB;<br>EPO; JPO;             | 2002/11/26          |
|   |      | pinned or pinning) adj layer) and (anti-ferromagnetic or antiferromagnetic) and magnetic near3 (sensing or sensor)             | DERWENT;<br>IBM_TDB                          |                     |
| _ | 13   | (((360/324).CCLS.) or (360/325).CCLS.) or (360/326).CCLS.) or (360/327).CCLS.) or ((360/113).CCLS.)) and (fixed or             | USPAT;<br>US-PGPUB;<br>EPO; JPO;             | 2002/11/26<br>14:31 |
|   |      | pinned or pinning) adj layer) and (anti-ferromagnetic)   | DERWENT;<br>IBM_TDB                          |                     |
|   |      | <pre>and magnetic near3 (sensing or sensor) and (insulation or insulating or dielectric) adj (layer or film)</pre>             |  | <u> </u>            |
| _ |      |  |  |                     |

|     |         | [/"lai in and genthatic adi  | USPAT;                 | 2002/11/26 |
|-----|---------|--|------------------------|------------|
| -   | 0       | ("lai.in. and synthetic adj<br>antiferromagnetic").PN.   | US-PGPUB;              | 18:34      |
|     |         | antiferromagnetic ).FN.  | EPO; JPO;              | 10.34      |
|     |         |  | DERWENT;               |            |
|     |         |  | IBM TDB                |            |
| _   | 2       | lai.in. and synthetic adj  | USPAT;                 | 2002/11/26 |
| _   |         | antiferromagnetic  | US-PGPUB;              | 18:34      |
|     |         | difference of the second of th | EPO; JPO;              |            |
|     |         |  | DERWENT;               |            |
|     |         |  | IBM TDB                |            |
| L - | 2       | ("5949623").PN.  | USPAT;                 | 2002/11/26 |
|     |         |  | US-PGPUB;              | 18:39      |
|     |         |  | EPO; JPO;              |            |
|     |         |  | DERWENT;               |            |
|     |         |  | IBM_TDB                |            |
| -   | 0       | (sf or synthetic adj ferrimagnetic)  | USPAT;                 | 2003/02/07 |
|     |         | near12 reference adj layer near12 (pin or  | US-PGPUB;              | 16:36      |
|     |         | pinned or un-pinned or unpinned)   | EPO; JPO;              |            |
| 1.  |         |  | DERWENT;               |            |
| 1   |         |  | IBM_TDB                | 2002/02/07 |
| 1/- | 65      | reference adj layer near12 (pin or pinned  | USPAT;                 | 2003/02/07 |
| 1   |         | or un-pinned or unpinned)  | US-PGPUB;              | 16:38      |
|     |         |  | EPO; JPO;              |            |
| 1   | î l     |  | DERWENT;               |            |
| 46  | _       |  | IBM_TDB                | 2003/02/07 |
| -   | 7       | reference adj layer near12 (pin or pinned  | USPAT;                 | 18:04      |
|     |         | or un-pinned or unpinned) and  | US-PGPUB;<br>EPO; JPO; | 10:04      |
|     |         | ferrimagnetic  | 1                      |            |
|     |         |  | DERWENT;               |            |
|     | 2       | (#5066012#) DM   | IBM_TDB<br>USPAT;      | 2003/02/07 |
| -   |         | ("5966012").PN.  | US-PGPUB;              | 18:04      |
|     |         |  | EPO; JPO;              | 10.04      |
|     |         |  | DERWENT;               |            |
|     |         |  | IBM TDB                |            |
| _   | 2       | ("5949623").PN.  | USPAT;                 | 2003/02/07 |
|     |         | ( 3313023 )  | US-PGPUB;              | 18:04      |
|     |         |  | EPO; JPO;              |            |
|     |         |  | DERWENT;               |            |
|     |         |  | IBM TDB                |            |
| _   | 205     | (seed or template) adj (layer or film)   | USPAT;                 | 2003/02/08 |
|     |         | and reference adj layer  | US-PGPUB;              | 11:51      |
|     | 1       | _  | EPO; JPO;              |            |
|     |         |  | DERWENT;               |            |
|     |         |  | IBM_TDB                |            |
| ! - | 3       |  | USPAT;                 | 2003/02/08 |
| +   | 4 1 44  | near6 reference adj layer  | US-PGPUB;              | 11:51      |
|     |         |  | EPO; JPO;              |            |
|     | 1       |  | DERWENT;               |            |
|     | 1       |  | IBM_TDB                | 2002/06/35 |
| -   | 9       | magneto-resistive.ti,ab,clm. and   | USPAT;                 | 2003/06/15 |
|     |         | reference adj layer near15 (pin pinned   | US-PGPUB;              | 12:25      |
|     | }       | un-pinned unpinned)  | EPO; JPO;              |            |
|     |         |  | DERWENT;               |            |
|     | 1       | /  | IBM_TDB                | 2003/06/15 |
| -   | 39      |  | USPAT;<br>US-PGPUB;    | 13:03      |
|     | 11 (11) | and reference adj layer  | 1                      | 13.03      |
|     |         |  | DERWENT;               |            |
|     | 110     |  | IBM TDB                |            |
|     | 1       | ("6576969").PN.  | USPAT;                 | 2003/06/15 |
| -   | 1       | ( 03/0303 ).FN.  | US-PGPUB;              | 12:35      |
|     |         |  | EPO; JPO;              | 1.5.55     |
|     | 1       |  | DERWENT;               |            |
|     |         |  | IBM_TDB                |            |
| 1   | 300     | (magnetic adj tunnel adj junction MTJ)   | USPAT;                 | 2003/06/15 |
|     | 300     | and (ferromagnetic reference) adj layer  | US-PGPUB;              | 13:04      |
|     |         | and (refromagneere reference) adj rayer  | EPO; JPO;              |            |
|     |         |  | DERWENT;               |            |
|     |         |  | IBM TDB                |            |
| 1   | 1       |  |                        |            |

| _          | 186 | (magnetic adj tunnel adj junction MTJ) and (ferromagnetic reference) adj layer | USPAT;<br>US-PGPUB; | 2003/06/15<br>13:50 |
|------------|-----|--|---------------------|---------------------|
|            |     | near12 direction   | EPO; JPO;           |                     |
|            |     |  | DERWENT;            |                     |
|            |     |  | IBM_TDB             |                     |
| -          | 102 | pinning adj layer and (mtj or  | USPAT;              | 2003/06/15          |
|            |     | magneto-resistive)   | US-PGPUB;           | 13:52               |
|            |     |  | EPO; JPO;           |                     |
|            |     |  | DERWENT;            |                     |
|            |     |  | IBM TDB             |                     |
| . <b>-</b> | 5   | (orient oriented oritentation) near12  | USPAT;              | 2003/06/15          |
|            |     | pinning adj layer and (mtj or  | US-PGPUB;           | 17:22               |
|            |     | magneto-resistive)   | EPO; JPO;           |                     |
|            |     | ,  | DERWENT;            |                     |
| ĺ          |     |  | IBM TDB             | 1                   |